IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Kazutaka Inukai et al.   Art Unit   : Unknown
Serial No. : Unassigned   Examiner : Unknown
Filed   : September 4, 2001
Title   : METHOD OF DRIVING EL DISPLAY DEVICE

Commissioner for Patents
Washington, D.C. 20231

PRELIMINARY AMENDMENT

Prior to examination, please amend the application as follows:

In the claims:

Amend claims 1, 4, 5, 8, 9, 12, 13, 16, 17, 20, 21 and 24 as follows:

1. (Amended) A method of driving an EL display device including a plurality of pixels, each having a first TFT, a second TFT, a third TFT, and an organic EL element, the method comprising:

dividing a frame period into $n + m$ display periods (where n and m are both natural numbers), wherein the $n + m$ display periods each correspond to one bit of a digital video signal among n bits of the digital video signal, a plurality of display periods, among the $n + m$ display periods correspond to the same bit of the digital video signal, and other display periods corresponding to other bits of the digital video signal, among the $n + m$ display periods, appear between the plurality of display periods;

for each of the $n + m$ display periods, inputting the corresponding bit of the digital video signal to a gate electrode of the second TFT by turning on the first TFT and beginning the respective display period by turning off the third TFT; and

after each of the $n + m$ display periods begins, completing the respective display period by beginning another display period or by turning on the third TFT;

wherein the organic EL element emits light when the second TFT is turned on, and does not emit light when the second TFT is turned off.

4. (Amended) A method according to claim 1, wherein the first TFT functions as a switching TFT, the second TFT functions as an EL driver TFT, and the third TFT functions as an erasing TFT.

5. (Amended) A method of driving an EL display device including a plurality of pixels, each having a first TFT, a second TFT, a third TFT, and an organic EL element, the method comprising:

dividing the frame period into n + m display periods (where n and m are both natural numbers), wherein the n + m display periods each correspond to one bit of a digital video signal among n bits of the digital video signal, a plurality of display periods, among the n + m display period correspond to the most significant bit of the digital video signal, and other display periods corresponding to other bits of the digital video signal, among the n + m display periods, appear between the plurality of display periods;

for each of the n + m display periods, inputting the corresponding bit of the digital video signal to a gate electrode of the second TFT by turning on the first TFT and beginning the respective display period by turning off the third TFT; and

after each of the n + m display periods begins, completing the respective display period by beginning another display period or by turning on the third TFT;

wherein the organic EL element emits light when the second TFT is turned on, and does not emit light when the second TFT is turned off.

8. (Amended) A method according to claim 5, wherein the first TFT functions as a switching TFT, the second TFT functions as an EL driver TFT, and the third TFT functions as an erasing TFT.

9. (Amended) A method of driving an EL display device including a plurality of pixels, each having a first TFT, a second TFT, a third TFT, and an organic EL element, the method comprising: .

dividing a frame period into n + m display periods (where n and m are both natural numbers), wherein the n + m display periods each correspond to one bit of a digital video signal among n bits of the digital video signal, upper bits of the digital video signal correspond to a plurality of display periods among the n + m display periods, and other display periods corresponding to other bits of the digital video signal, among the n + m display periods, appear between the plurality of display periods;

for each of the n + m display periods, inputting the corresponding bit of the digital video signal to a gate electrode of the second TFT by turning on the first TFT and beginning the respective display period by turning off the third TFT; and

after each of the n + m display periods begins, completing the respective display period by beginning another display period, or by turning on the third TFT;

wherein the organic EL element emits light when the second TFT is turned on, and does not emit light when the second TFT is turned off.

12. (Amended) A method according to claim 9, wherein the first TFT functions as a switching TFT, the second TFT functions as an EL driver TFT and the third TFT functions as an erasing TFT.

13. (Amended) A method of driving an EL display device including a plurality of pixels, each having a first TFT, a second TFT and an organic EL element, the method comprising:

dividing a frame period into n + m display periods (where n and m are both natural numbers), wherein the n + m display periods each correspond to one bit of a digital video signal among n bits of the digital video signal, a plurality of display periods, among the n + m display periods, correspond to the same bit of the digital video signal, and other display periods corresponding to other bits of the digital video signal, among the n + m display periods, appear between the plurality of display periods;

for each of the n + m display periods, inputting the corresponding bit of the digital video signal to a gate electrode of the second TFT by turning on the first TFT; and

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after each of the n + m display periods begins, completing the respective display period by beginning another display period;

wherein the organic EL element emits light when the second TFT is turned on, and does not emit light when the second TFT is turned off.

16. (Amended) A method according to claim 13, wherein the first TFT functions as a switching TFT and the second TFT functions as an EL driver TFT.

17. (Amended) A method of driving an EL display device including a plurality of pixels, each having a first TFT, a second TFT, and an organic EL element, the method comprising:

dividing a frame period into n + m display periods (where n and m are both natural numbers), wherein the n + m display periods each correspond to one bit of a digital video signal among n bits of the digital video signal, a plurality of display periods, among the n + m display periods, correspond to the most significant bit of the digital video signal, and other display periods corresponding to other bits of the digital video signal, among the n + m display periods, appear between the plurality of display periods;

for each of the n + m display periods, inputting the corresponding bit of the digital video signal to a gate electrode of the second TFT by turning on the first TFT; and

after each of the n + m display periods begins, completing the respective display period by beginning of another display period;

wherein the organic EL element emits light when the second TFT is turned on and does not emit light when the second TFT is turned off.

20. (Amended) A method according to claim 17, wherein the first TFT functions as a switching TFT and the second TFT functions as an EL driver TFT.

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21. (Amended) A method of driving an EL display device including a plurality of pixels, each having a first TFT, a second TFT, and an organic EL element, the method comprising:

dividing a frame period into $n + m$ display periods (where n and m are both natural numbers), wherein the $n + m$ display periods each correspond to one bit of a digital video signal among n bits of the digital video signal, upper bits of the digital video signal correspond to a plurality of display periods among the $n + m$ display periods, and other display periods corresponding to other bits of the digital video signal, among the $n + m$ display periods, appear between the plurality of display periods;

for each of the $n + m$ display periods, inputting the corresponding bit of the digital video signal to a gate electrode of the second TFT by turning on the first TFT; and

after each of the $n + m$ display periods begins completing the respective display period by beginning another display period;

wherein the organic EL element emits light when the second TFT is turned on and does not emit light when the second TFT is turned off.

24. (Amended) A method according to claim 21, wherein the first TFT functions as a switching TFT and the second TFT functions as an EL driver TFT.

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<div align="center">REMARKS</div>

   The amendments to the claims made herein are to correct minor grammatical errors and to place the application in better form for examination. No new matter is added.

   Attached is a marked-up version of the changes being made by the current amendment.

   Applicants ask that all claims be examined. Please apply any charges or credits to Deposit Account No. 06-1050.

           Respectfully submitted,

Date: September 4, 2001

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Version with markings to show changes made

In the claims:

Claims 1, 4, 5, 8, 9, 12, 13, 16, 17, 20, 21 and 24 have been amended as follows:

1. (Amended) A method of driving an EL display device **[in which]** including a plurality of pixels, each having a first TFT, a second TFT, a third TFT, and an organic EL element, **[are formed, wherein]** the method comprising:

dividing a frame period into n + m display periods (where n and m are both natural numbers) **[appear in one frame period;]**, wherein the n + m display periods each correspond to one bit of a digital video signal among n bits of the digital video signal**[;]**, a plurality of display periods, among the n + m display periods correspond to the same bit of the digital video signal**[;]**, and other display periods corresponding to other bits of the digital video signal, among the n + m display periods, appear between the plurality of display periods;

for each of the n + m display periods, inputting the corresponding bit of the digital video signal **[is input]** to a gate electrode of the second TFT by turning on the first TFT **[turning on,]** and beginning the respective display **[periods begin]** period by turning off the third TFT **[turning off]**; and

after each of the n + m display periods begins, completing the respective display **[periods are completed]** period by **[the]** beginning **[of]** another display period**[,]** or by turning on the third TFT **[turning on; and]**;

wherein the organic EL element emits light when the second TFT is turned on, and does not emit light when the second TFT is turned off.

4. (Amended) A method according to claim 1, wherein the first TFT functions as a switching TFT, the second TFT functions as **[a]** an EL driver TFT, and the third TFT functions as **[a]** an erasing TFT.

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5. (Amended) A method of driving an EL display device **[in which]** including a plurality of pixels, each having a first TFT, a second TFT, a third TFT, and an organic EL element, **[are formed, wherein]** the method comprising:

dividing a frame period into n + m display periods (where n and m are both natural numbers), **[appear in one frame period;]** wherein the n + m display periods each correspond to one bit of a digital video signal among n bits of the digital video signal**[;]**, a plurality of display periods, among the n + m display period correspond to the most significant bit of the digital video signal**[;]**, and other display periods corresponding to other bits of the digital video signal, among the n + m display periods, appear between the plurality of display periods;

for each of the n + m display periods, inputting the corresponding bit of the digital video signal **[is input]** to a gate electrode of the second TFT by turning on the first TFT **[turning on,]** and beginning the respective display **[periods begin]** period by turning off the third TFT **[turning off:]; and**

after each of the n + m display periods begins, completing the respective display **[periods are completed]** period by **[the]** beginning **[of]** another display period**[,]** or by turning on the third TFT **[turning on; and]**;

wherein the organic EL element emits light when the second TFT is turned on, and does not emit light when the second TFT is turned off.

8. (Amended) A method according to claim 5, wherein the first TFT functions as a switching TFT, the second TFT functions as **[a]** an EL driver TFT, and the third TFT functions as **[a]** an erasing TFT.

9. (Amended) A method of driving an EL display device **[in which]** including a plurality of pixels, each having a first TFT, a second TFT, a third TFT, and an organic EL element, **[are formed wherein]]** the method comprising:

dividing a frame period into n + m display periods (where n and m are both natural numbers), **[appear in one frame period;]** wherein the n + m display periods each

correspond to one bit of a digital video signal among n bits of the digital video signal[;], upper bits of the digital video signal correspond to a plurality of display periods among the n + m display periods[;], and other display periods corresponding to other bits of the digital video signal, among the n + m display periods, appear between the plurality of display periods;

for each of the n + m display periods, inputting the corresponding bit of the digital video signal **[is input]** to a gate electrode of the second TFT by turning on the first TFT **[turning on,]** and beginning the respective display **[periods begin]** period by turning off the third TFT **[turning off]**; and

after each of the n + m display periods begins, completing the respective display **[periods are completed]** period by **[the]** beginning **[of]** another display period, or by turning on the third TFT **[turning on]**; **[and]**

wherein the organic EL element emits light when the second TFT is turned on, and does not emit light when the second TFT is turned off.

12. (Amended) A method according to claim 9, wherein the first TFT functions as a switching TFT, the second TFT functions as **[a]** an EL driver TFT and the third TFT functions as **[a]** an erasing TFT.

13. (Amended) A method of driving an EL display device **[in which]** including a plurality of pixels, each having a first TFT, a second TFT and an organic EL element **[are formed, wherein:]**, the method comprising:

dividing a frame period into n + m display periods (where n and m are both natural numbers), **[appear in one frame period;]** wherein the n + m display periods each correspond to one bit of a digital video signal among n bits of the digital video signal[;], a plurality of display periods, among the n + m display periods, correspond to the same bit of the digital video signal[;], and other display periods corresponding to other bits of the digital video signal, among the n + m display periods, appear between the plurality of display periods;

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for each of the n + m display periods, <u>inputting</u> the corresponding bit of the digital video signal **[is input]** to a gate electrode of the second TFT by <u>turning on</u> the first TFT **[turning on:]**<u>; and</u>

after each of the n + m display periods begins, <u>completing</u> the respective display **[periods are completed]** <u>period</u> by **[the]** beginning **[of]** another display period; **[and]**

<u>wherein</u> the organic EL element emits light when the second TFT is turned on, and does not emit light when the second TFT is turned off.

16. (Amended) A method according to claim 13, wherein the first TFT functions as a switching TFT and the second TFT functions as **[a]** <u>an</u> EL driver TFT.

17. (Amended) A method of driving an EL display device **[in which]** <u>including</u> a plurality of pixels, each having a first TFT, a second TFT, and an organic EL element, **[are formed, wherein]** <u>the method comprising</u>:

<u>dividing a frame period into</u> n + m display periods (where n and m are both natural numbers)<u>, wherein</u> **[appear in one frame period;]** the n + m display periods each correspond to one bit of a digital video signal among n bits of the digital video signal**[;]**<u>,</u> a plurality of display periods, among the n + m display periods, correspond to the most significant bit of the digital video signal**[;]**<u>, and</u> other display periods corresponding to other bits of the digital video signal, among the n + m display periods, appear between the plurality of display periods;

for each of the n + m display periods, <u>inputting</u> the corresponding bit of the digital video signal **[is input]** to a gate electrode of the second TFT by <u>turning on</u> the first TFT **[turning on]**<u>; and</u>

after each of the n + m display periods begins, <u>completing</u> the respective display **[periods are completed]** <u>period</u> by **[the]** beginning of another display period; **[and]**

<u>wherein</u> the organic EL element emits light when the second TFT is turned on, and does not emit light when the second TFT is turned off.

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20. (Amended) A method according to claim 17, wherein the first TFT functions as a switching TFT and the second TFT functions as [a] an EL driver TFT.

21. (Amended) A method of driving an EL display device [in which] including a plurality of pixels, each having a first TFT, a second TFT, and an organic EL element, [are formed, wherein] the method comprising:

dividing a frame period into n + m display periods (where n and m are both natural numbers) [appear in one frame period;], wherein the n + m display periods each correspond to one bit of a digital video signal among n bits of the digital video signal[;], upper bits of the digital video signal correspond to a plurality of display periods among the n + m display periods[;, and] other display periods corresponding to other bits of the digital video signal, among the n + m display periods, appear between the plurality of display periods;

for each of the n + m display periods, inputting the corresponding bit of the digital video signal [is input] to a gate electrode of the second TFT by turning on the first TFT [turning on]; and

after each of the n + m display periods begins completing the respective display [periods are completed] period by [the] beginning [of] another display period; [and]

wherein the organic EL element emits light when the second TFT is turned on and does not emit light when the second TFT is turned off.

24. (Amended) A method according to claim 21, wherein the first TFT functions as a switching TFT and the second TFT functions as [a] an EL driver TFT.